

April 3, 1945.

A. P. HULTGREN ET AL

2,372,672

CABINET

Filed July 29, 1941

2 Sheets-Sheet 1

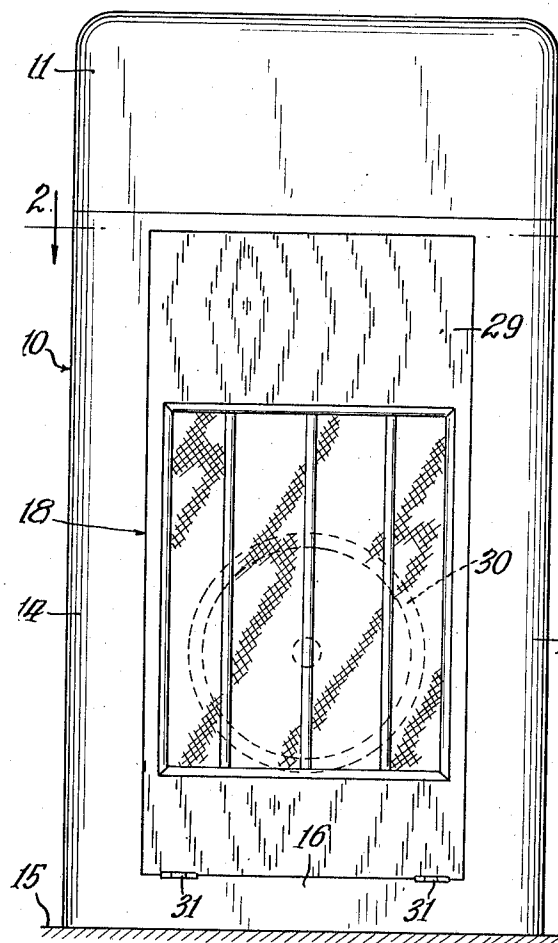


Fig. 1

Fig. 2

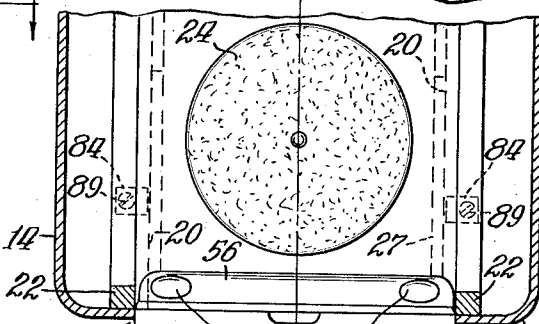
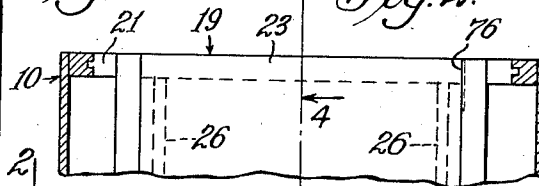


Fig. 3

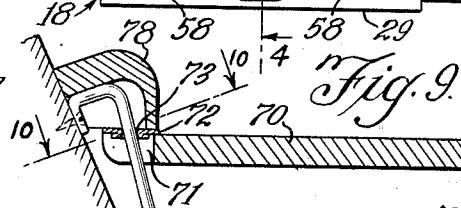


Fig. 11

Fig. 9

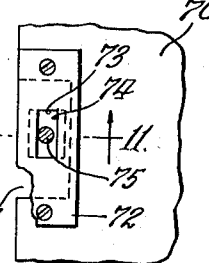


Fig. 10

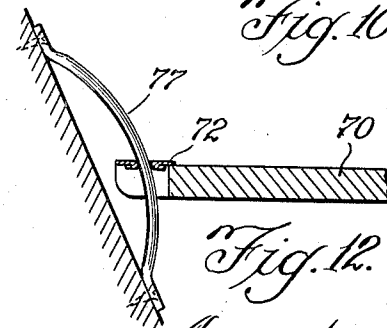


Fig. 12

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2 Sheets-Sheet 2

Fig. 4.

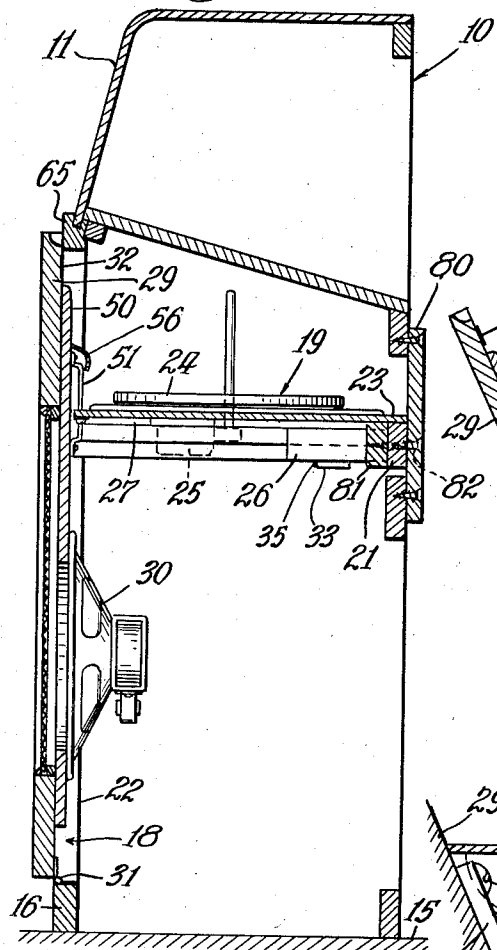


Fig. 5.

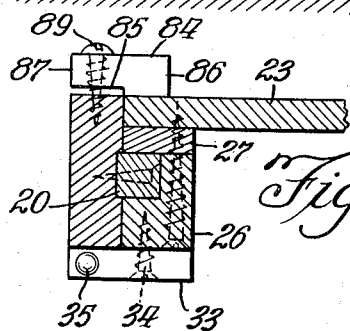
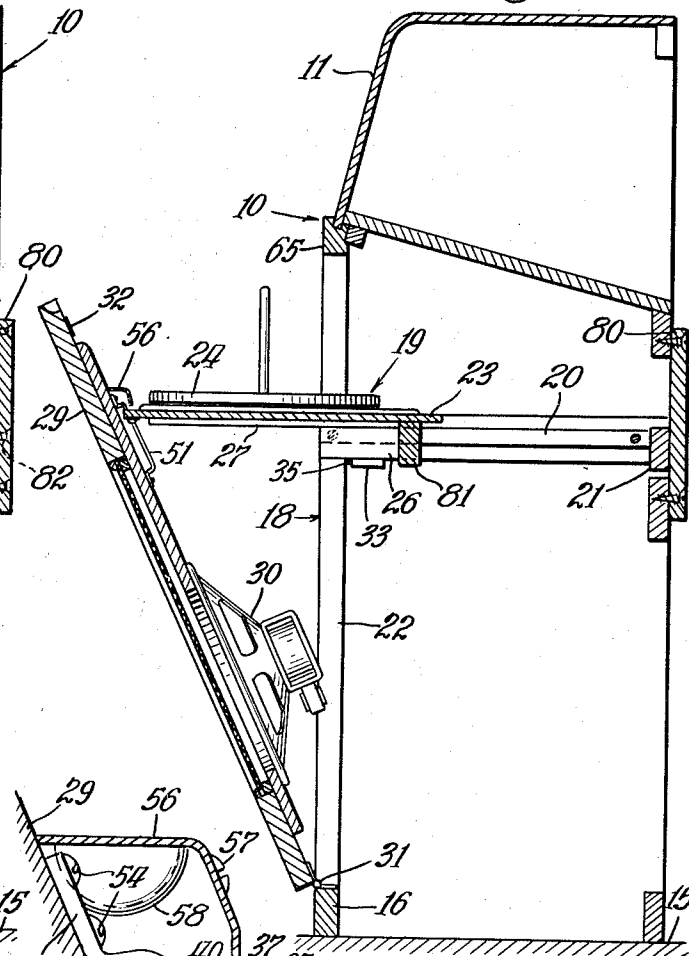


Fig. 6.

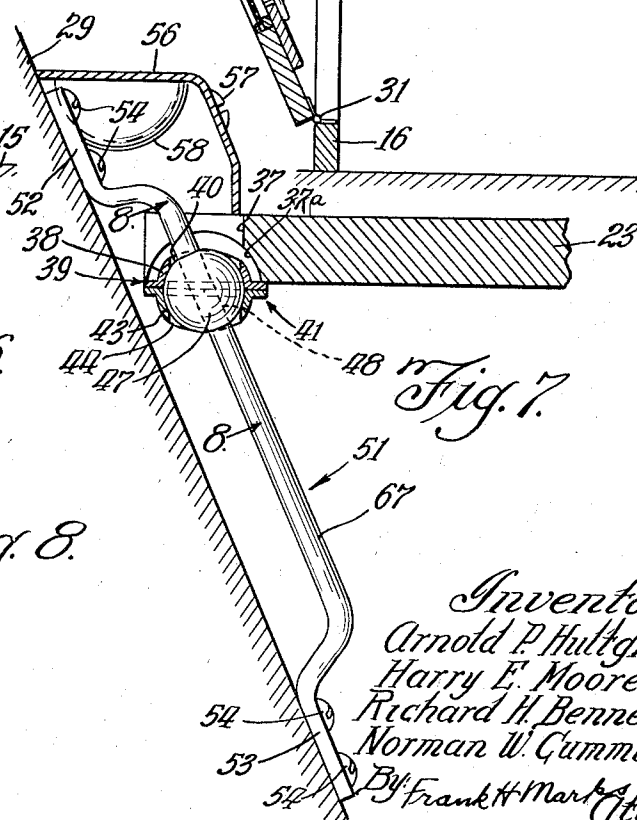


Fig. 7.

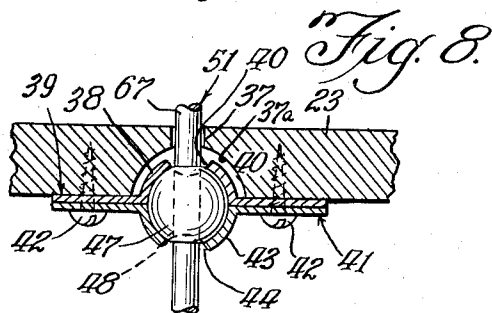


Fig. 8.

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UNITED STATES PATENT OFFICE

2,372,672

CABINET

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Application July 29, 1941, Serial No. 404,500

2 Claims. (Cl. 312-8)

This invention has to do with improvements in phonograph and radio-phonograph cabinets and, more particularly, with those of the so-called bin-type.

In a conventional cabinet of this type, a phonograph motor and automatic record changer and turntable are mounted on a swinging unit in a compartment of the cabinet, the unit comprising a board or platform whose front and rear ends are pivoted to upper portions of a front grille and rear support, both of the latter being swingable about pivots at their lower ends, the parts being arranged to remain by gravity selectively in the fully closed or fully open position, the top of the cabinet serving as a radio. The speaker of the radio serves selectively as a part of the phonograph. The unit is swung forward to its loading position, where the top of the grille is spaced from the radio to render the turntable (and record changer and/or recorder) control mechanism readily accessible to the user.

The swinging unit just referred to has the following, among other, disadvantages. Being rather heavy and moving by gravity to its open and closed positions, the unit is subjected to a jar or shock each time it reaches an open or closed position, with consequent ultimate injury to delicate and other parts of the unit and to the records, unless unusual care is taken by the user to avoid such shocks. The turntable, when not in use, must be well below the radio, and hence well below the top of the grille, in order to make room for the record-supporting spindle, records, automatic record changer mechanism, etc., and, due to the fact that the grille is inclined forward and upward when open, the mounting board or platform when open is still lower, requiring the user in many cases to stoop. Precision is necessary in locating the pivot connections for the mounting board and for the grille and rear support for said board to insure that the turntable will be horizontal in service. The mounting board is supported only at its front and rear ends, requiring exceptionally strong end-supporting pivots and giving rise to undamped vibration.

It is accordingly a general purpose of our invention to overcome the above-noted among other disadvantages.

It is an object of our invention to provide a device of the character referred to wherein the mounting board is at all times at the same level.

A further object is to provide a device of said character in which the turntable is at all times horizontal.

Another object is to provide a device of said character in which the mounting board is slidable between its extreme positions.

It is also an object to provide a device of said character in which the mounting board is so supported as to require substantially only nominal strength in the connection between it and the grille.

An additional object is to so mount the mounting board as to eliminate the necessity for a rear movable support therefor.

Further objects and advantages of the invention will appear as the description proceeds.

The invention will be better understood upon reference to the following description and the accompanying drawings, in which:

Fig. 1 is a front elevation of an illustrative embodiment of our invention, with the phonograph compartment closed.

Fig. 2 is a plan sectional view of the same, taken as indicated by the line 2-2 in Fig. 1.

Fig. 3 is a view similar to Fig. 2 but with the phonograph compartment open.

Fig. 4 is a sectional elevation taken as indicated by the line 4-4 in Fig. 2.

Fig. 5 is a sectional elevation taken as indicated by the line 5-5 in Fig. 3 with the turntable motor omitted for the sake of clearness.

Fig. 6 is a sectional elevation taken as indicated by the line 6-6 in Fig. 3.

Fig. 7 is an enlarged fragmentary sectional view showing details of one form of articulated connection between the grille and the motor mounting board, with the latter in its foremost position.

Fig. 8 is a fragmentary sectional view taken substantially as indicated by the line 8-8 in Fig. 7.

Fig. 9 is a view similar to Fig. 7 but of a modification.

Fig. 10 is a fragmentary plan view taken as indicated by the line 10-10 in Fig. 9.

Fig. 11 is a fragmentary sectional view taken as indicated by the line 11-11 in Fig. 10.

Fig. 12 is a view similar to Fig. 9 but of a further modification.

Referring now more particularly to the drawings, disclosing illustrative embodiments of the invention, there is provided a console or other suitable cabinet 10 comprising at its top a radio compartment 11 and sides or legs 14 depending from the radio to rest on a floor 15, the lower ends of the legs being preferably bridged as at 16, providing an opening or compartment 18 formed

to receive a phonograph unit 19 embodying features of our invention.

In accordance with the invention, we provide in the space 18 preferably horizontal runways or slide tracks 20 supported in any suitable manner, as from the back brace 21 and the pilasters 22 associated with the legs 14. A platform or board 23, carrying a turntable 24 (and associated record changer and/or recorder) and control mechanism and a motor 25, is provided with slide runners 26 complementary to and slidably interfitted with the parts 20 so that said board is easily movable fore and aft in its own plane and will remain in any adjustment, a suitable lubricant being used if desired. The runners 26 have forward extensions 27 which overlie substantially the entire length of the tracks 20 when the compartment is closed, so that the platform is efficiently supported in its sliding movements, and sufficient interengagement is provided to substantially dampen any tendency of the board to vibrate when sound is emitted. A grille board 29 serving also as a baffle and having a speaker as at 30 has its lower end suitably hinged as at 31 to a lower portion of the cabinet to swing from the closed position shown in Figs. 2 and 4 to the fully open position shown in Figs. 3 and 5, suitable felt, rubber or other buttons or pads 32 being provided to cushion the closing of the grille.

Any suitable stop means may be provided to limit the forward movement of the mounting board 23. One such means may comprise lugs 35 suitably positioned and mounted as by screws 34 on the bottoms of the runners 26 so as to abut and be stopped as by the pilasters 22 as shown in Fig. 3. Rubber, felt or other suitable means such as buttons 35 may be provided on the lugs 33 as shown in Fig. 5 to abut the pilasters 22 to cushion the parts when the grille reaches its fully open position.

The front end 36 of the mounting board 23 in accordance with one form of our invention has a notch 37 and a communicating recess 37a receiving a semi-spherical hollow bearing 38 formed on a guide and bearing plate 39, said bearing having a slot 40 registering with the notch 37. A duplicate plate 41 is disposed below the plate 39, both plates being suitably secured to the mounting board as at 42. The plate 41 has a bearing 43 formed with a slot 44 in register with the slot 40. The bearings 38 and 43 form a ball socket receiving a ball 47 having a preferably diametral and also preferably cylindrical hole 48 adapted in various positions of the ball to register with the notch 37 and slots 40 and 44. If desired, the socket and the member 47 could be cylindrical with their axis transverse to the plane of Fig. 7, instead of spherical.

The grille 29 is provided on its back side 50 with a member 51 for cooperating with the ball 47 and associated structure to translate swinging movement of the grille into sliding movement of the mounting board 23. The member 51 may comprise a preferably cylindrical rod threaded through the notch 37, slot 40, hole 48 and slot 44, the ends 52 and 53 of the member being thereafter secured as at 54 to the grille.

An escutcheon plate or bar 56 suitably secured as at 57 to the back of the grille 29 preferably extends substantially across the top, and may be formed or provided with needle cups 58.

The escutcheon 56 may engage the top of the mounting board and/or the stop lugs 33 may be relied upon, to stop the grille 29 and mounting

board 23 in the desired outermost positions thereof, as shown in Fig. 7.

The grille may abut the front of the cabinet 10 as at 65.

The rod portion 67 passing through the bearing element 47 may be straight and in a vertical plane, and the rod 51 may be symmetrical for economy of manufacture, substantially as shown. The disposition of the portion 67 is preferably such that the upward component of the force exerted upon the mounting board at the commencement of the opening is substantially zero, and the like component at the commencement of the closing movement is negligible due to the use of the sliding bearing mechanism with which the rod portion 67 cooperates.

In accordance with another form of our invention, shown in Figs. 9, 10 and 11, the front end of the motor mounting board 70 may be notched out as at 71, and a bearing and escutcheon plate 72 secured to said board so as to overlie said notch 71. The plate 72 has an opening 73 over the notch 71 and formed to provide a bearing 74 loosely receiving the rod 75 which, like the above described rod 51, serves as a motion-transmitting connection between the mounting board and the grille, and it will be observed that ample clearance is afforded by the walls of the notch and by the bearing 74 to enable the rod to have the relative sliding and swinging motion necessary to the adequate functioning of the parts. The plate 72 may be suitably shielded as by the escutcheon 78.

When the door is to be closed, it is necessary merely for the operator to exert a rearward shove thereon until that end is accomplished, the escutcheon moving clear of the part engaged thereby when in its foremost position and the rod engaging the rear portion of the bearing wall 74 of the plate 73 during this movement to transmit rearward motion from the door to the motor mounting board 23.

The rod 75 is preferably inclined at the same angle with the vertical when the grille is fully closed as when the grille is fully open, so that the upward components of the forces exerted upon the mounting board at the commencement of the opening and closing movements are equalized. These components are highest at such times, but are substantially negligible because the vectors at such times are substantially or nearly horizontal. However, if desired, the inclination of the rod 75 may be such that the component normal to the plane of the motor mounting board at the beginning of the opening movement of the door is zero or that such component at the beginning of the closing movement of the door is zero, or any other desired inclination may be selected. However, the first-mentioned arrangement is preferred since, by it, the initial component at the opening and closing movements of the door is practically negligible.

A spring 76 is preferably secured in a recess in the inner side of one of the slides 20 to exert pressure sidewise on the shelf when the latter is in its rearmost position to prevent rattling.

The arrangement of Fig. 12 provides for the use of a curved rod 77 instead of a straight one 75 above referred to.

The mounting board or shelf 23 and associated parts may be readily secured against movement during shipment. Means for so doing is illustrated in the drawings. To this end, there may be secured at the back of the cabinet a block 80 and to the adjacent rear bottom of the shelf 23 a block 81. When the parts are arranged as

shown in Fig. 4, a screw 82 may be applied through the block 80 and brace 21 and into the block 81 to hold the shelf in its rearmost position for shipment. For the purpose of assisting the means including the screw 82 and insuring against rattling and substantially any relative movement of any of the parts during shipment, especially when the cabinet for this purpose may be upside down, we may provide a pair of blocks 84 rabbeted as at 85, providing legs 86 over the shelf 23 and other legs 87 overlying and spaced from the slides 20. Screws or the like 89, when applied to the legs 87 and engaged with the slides 20, force the legs 86 against the mounting board and hence the forward extensions 27 of the runners 26 against the tops of the tongues of the slides 20 forwardly of the runners 26.

It will be observed that when the mounting board 23 is in its outermost, or fully open position, where it is readily available for the application and removal of records relative to the turntable 23 and for the manipulation of the record changer, tone arm and control instrumentalities and the application and removal of needles, a substantial portion of the length of the board is supported on the runways 20, so that there is substantially no tendency on the part of the motor mounting board to tilt and thus create excessive friction with respect to the runways. When the rearward movement of the grille 29 is commenced, any tendency to tilt the front end of the mounting board 23 upward is substantially overcome by the weight of the parts carried by the mounting board.

It is apparent from the foregoing that we have provided a construction which is notable for its simplicity, and hence economy, involving a minimum of parts which require no special mounting or precision in their assembly, and characterized by durability and ease of manipulation in the process of opening and closing and adjusting the grille.

The number and location of the hinges connecting the grille to the cabinet, and likewise as to the connections between the grille and the shelf, may be varied as desired. The grille could be mounted on vertically or otherwise disposed hinges or in any other suitable manner.

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of our invention and, hence, we do not wish to be restricted to the specific form shown or uses mentioned, except to the extent indicated in the appended claims, which are to be

interpreted as broadly as the state of the art will permit.

We claim:

1. A cabinet having a front wall and an opening in said wall, the portion of said wall bordering said opening lying in substantially a single plane, a shelf mounted in said cabinet intermediate the top and bottom of said opening and slidably movable outward through said opening, a door panel for said opening and horizontally hinged to the cabinet at the bottom of said opening, a rod mounted at the inner side of said panel and disposed in a vertical plane, means on said shelf providing a bearing receiving and slidably and progressively engaging a length of said rod intermediate the ends thereof as said panel is swung open and shut, thereby to impart outward and inward movements to said shelf, the part of the rod so engaged being substantially bowed toward the back of said cabinet and the engaged portions of said part at the commencement of the outward and inward movements of said panel being nearly normal to said shelf, the upper end of said part when engaged by said bearing being disposed substantially below the upper end of said panel, said panel projecting upward from the front end of said shelf at all times to shield whatever is supported on said shelf.
2. A radio-phonograph cabinet structure having a front wall in a substantially vertical plane with a rectangular opening therein, a shelf mounted in said cabinet intermediate said opening and slidably movable between a concealment and an exposed position, a door panel for said opening horizontally hinged to said cabinet at the lowermost level of said opening and preponderously remote from said shelf, an inwardly curved articulation rod mounted on the inner surface of said panel in a vertical plane, means on said shelf for engaging said rod for thereby constituting a slidable bearing connection therewith to engage said rod length during angular movement of said panel from its vertical closure position to an inclined open position for thereby imparting movement to said shelf, the portion of said rod engaged by said bearing being bent into offset relation with the inner surface of said panel so as to approach an approximately perpendicular angle to said bearing during all conditions of movement of said panel.

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